

Appl. No. 10/675,230
Amdt. Dated April 11, 2006
Reply to Office Action of December 14, 2005

Attorney Docket No. 81864.0024
Customer No.: 26021

REMARKS

This application has been carefully reviewed in light of the Office Action dated December 14, 2005. Claims 1-4 and 6-7 remain in this application. Claim 1 is the independent Claim. Claims 1, 3 and 6 have been amended. Claim 5 has been canceled without prejudice. It is believed that no new matter is involved in the amendments or arguments presented herein. Reconsideration and entrance of the amendment in the application are respectfully requested.

Double Patenting Rejections

Claims 1 to 7 were rejected under nonstatutory obviousness-type double patenting over claims 1-5 of U.S. Patent No. 6,811,620 (Ishizaka); Claims 1-7 were provisionally rejected under nonstatutory obviousness-type double patenting over claims 1-9 of copending Application No. 10/799,153 (Ishizaka II), and 1-11 of copending Application No. 10/675,912 (Nishizawa).

In response to the rejection over Ishizaka, Applicant is concurrently concurrently a Terminal Disclaimer. Reconsideration and withdrawal of the above rejections are respectfully request.

Art-Based Rejections

Claims 1 and 2 were rejected under 35 U.S.C. § 102(b) over each of following IDS documents submitted on April 18, 2005: "Microstructure of Zr containing NDFEB," IEEE Transactions on Magnetics (Kim); "Effect of ZR Additions On The Microstructure and Magnetic Properties of NdFeB Based Magnets," IEEE Transactions on Magnetics (Pollard), and "The Influence of ZrO₂ Addition on the Microstructure and the Magnetic Properties of Nd-Dy-Fe-B Magnets," Journal of Magnetism and Magnetic Materials (Besenicar); Claims 3, 4, and 7 were rejected

under 102(b) or 35 U.S.C. § 103(a) over Kim, Pollard, and Bessenicar; Claims 1-7 were rejected under § 103(a) over Ishizaka.

Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the clarifying amendments above and the arguments below.

The Kim Reference

Kim is directed to microstructure of Zr containing Nd-Fe-B alloy. According to Kim, simultaneous additions of Co, Al, and Zr to Nd(Dy)-Fe-B alloy substantially improves the coercivity, corrosion resistance, and Curie temperature. (*See, Kim; Abstract*).

The Pollard Reference

Pollard is directed to microstructure of a sintered magnet made from Zr containing Nd-Fe-B alloy. According to Pollard, the coercivity is enhanced over the alloy. (*See, Pollard; Abstract*).

The Besenicar Reference

Besenicar is directed to addition of ZrO₂ to Nd-Dy-Fe-B magnet. According to Besenicar, the addition improves the magnetic properties, temperature coefficient, and corrosion improvement of the base alloy. (*See, Besenicar; Abstract*).

The Ishizaka Reference

Ishizaka is directed to an R-T-B rare earth permanent magnet, which is a sintered body including a main phase consisting of an R₂T₁₄B phase. R represents one or more rare earth elements (providing that the rare earth elements include Y).

T represents one or more transition metal elements essentially containing Fe, or Fe and Co). The body further includes a grain boundary phase containing a higher amount of R than the above main phase. A product that is rich in Zr exists in the above $R_2T_{14}B$ phase. The product that is rich in Zr has a platy or acicular form. According to Ishizaka, the R-T-B system rare earth permanent magnet containing the product inhibits the grain growth, while keeping a decrease in magnetic properties to a minimum, and to obtain a wide suitable sintering temperature range. (See, Ishizaka; Abstract)

The Claims are Patentable Over the Cited References

The present application is generally directed to an R-T-B rare earth permanent magnet.

As defined by amended independent Claim 1, an R-T-B system rare earth permanent magnet includes a main phase consisting of an $R_2T_{14}B_1$ phase (R represents one or more rare earth elements, provided that the rare earth elements include Y, and T represents at least one transition metal element containing, as a main constituent, Fe, or Fe and Co), and a grain boundary phase containing a higher amount of R than said main phase. The R-T-B system rare earth permanent magnet is a sintered body having a composition including 28% to 33% by weight of R, 0.5% to 1.5% by weight of B, 0.03% to 0.3% by weight of Al, 0.3% or less (excluding 0) by weight of Cu, 0.05% to 0.2% by weight of Zr, 4% or less by weight (excluding 0) of Co, 0.2% or less by weight of oxygen, and the balance substantially being Fe. The sintered body contains a region that is rich both Cu and Zr.

Applicant notes the amended Claim 1 and Claim 3 are fully supported by the Specification of present application. (*See, Specification; Claim 1 see Page 37, line 20 – Page 42, line 19; Fig. 24 and 25; Claim 3 see Page 41, lines 20-26; Fig. 25*).

The applied references do not disclose or suggest the above features of the present invention as defined by the claims of present invention. In particular, the applied references do not disclose or suggest, "said R-T-B system rare earth permanent magnet being a sintered body having a composition consisting essentially of 28% to 33% by weight of R, 0.5% to 1.5% by weight of B, 0.03% to 0.3% by weight of Al, 0.3% or less (excluding 0) by weight of Cu, 0.05% to 0.2% by weight of Zr, 4% or less by weight (excluding 0) of Co, 0.2% or less by weight of oxygen, and the balance substantially being Fe," as required by amended independent Claim 1.

Moreover, the applied references do not disclose or suggest, "said sintered body containing a region that is rich both Cu and Zr," as required by amended independent Claim 1.

Regarding the Kim reference, Applicant notes that reference does not disclose or suggest the composition and range recited in amended independent Claim 1. Table 1 of Kim discloses alloy composition including Nd, Dy, Fe. The compositions listed in Table 1 of Kim is silent regard Cu, and includes 0 or 1% Zr. In contrast, amended independent Claim 1 requires 4% or less Cu and 0.05-0.2% Zr.

Moreover, Kim is silent regarding the sintered body containing a region that is rich in both Cu and Zr. Accordingly, Kim cannot be said to anticipate all the features of amended independent Claim 1.

With respect to the Pollard reference, Applicant notes that reference discloses a Nd-Fe-B magnet containing Zr. However, Pollard is silent regarding the inclusion and amount of Al, Cu, and Co. Accordingly, Pollard cannot be said to disclose or suggest a region that is rich in both Cu and Zr, and thus does not anticipate all the features of amended independent Claim 1.

With regard to the Besenicar reference, Applicant notes that reference discloses a R-Fe-B magnet containing Zr. However, the magnet does not contain Cu. The peaks of Cu shown in Fig. 2 comes from the sample holder, not from the magnet. (*See, Besenicar; Page 1175, right column, line 30*). In addition, Besenicar is silent about the inclusion and amount of Al and Co. Besenicar thus does not disclose all the features of amended independent Claim 1.

With regard to the 103(a) rejection over Kim, Pollard, and Besenicar, Applicant respectfully submits the above references cannot be properly combined to obtain the features of amended independent Claim 1. That claim requires the presence of a region that is rich both in Cu and Zr. The applied references do not disclose or suggest a permanent magnet with the chemical composition as defined in amended independent Claim 1. Moreover, the applied references are silent regarding the advantages of a region that is rich both in Cu and Zr. Accordingly, the applied references cannot be properly combined under § 103(a) to reject claim 1.

With regard to the § 103(a) rejection over Ishizaka, Applicant respectfully notes the reference constitute prior art only under 35 U.S.C. § 102(e), and is assigned to the common owner as the present application. Accordingly, Applicant is submitting concurrently a statement showing the invention of present application and the above reference are commonly assigned at the time of invention. Recordation of the statement and withdrawal of the § 103(a) rejection over Ishizaka is thus respectfully requested.

Since the applied references fail to disclose, teach or suggest the above features recited in amended independent Claim 1, those references cannot be said to anticipate or render obvious the invention which is the subject matter of that claim.

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Accordingly, amended independent Claim 1 is believed to be in condition for allowance and such allowance is respectfully requested.

The remaining claims depend either directly or indirectly from amended independent Claim 1, and recite additional features of the invention which are neither disclosed nor fairly suggested by the applied references and are therefore also believed to be in condition for allowance, and such allowance is respectfully requested.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6809 to discuss the steps necessary for placing the application in condition for allowance.

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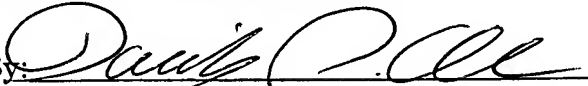
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If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
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